Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of determining the time-varying absolute position of a device with respect to a surface having a position-encoded portion and an obscured portion, wherein the position-encoded portion bears accessible encoded position data and the obscured portion does not bear accessible position data, the method comprising the steps of:

moving the device with respect to the surface;

measuring a time-varying vector representing the relative movement of the device over the position-encoded portion and the obscured portion of said surface during motion of the device;

measuring at least one absolute position of the device with respect to the position-encoded portion of said surface during a portion of said motion when said position-encoded portion of said surface is accessible; ~~and~~

initializing the position of the vector to the at least one absolute position measurement thereby measuring the absolute position of the vector and thus the time-varying absolute position of the device; and

recording the measured time-varying absolute position of the device for subsequent outputting to an interpreter mechanism.

2. (currently amended) A method of determining the absolute position of a stroke made by a measurement device with respect to a surface, said surface having embedded thereon position

encoding indicia, the method comprising:

moving the measurement device over the position-encoded surface, and whenever the measurement device passes over said one or more position encoding indicia, at any point of said motion, detecting one or more position encoding indicia, thereby calculating at least one absolute position measurement of the device;

in conjunction with the aforementioned detection, measuring the relative movement of the device with respect to the position-encoded surface and thereby calculating a time-varying motion vector representing the movement of the device with respect to the surface; ~~and~~

calculating the absolute location of the stroke with respect to the position-encoded surface on the basis of at least one measurement of the absolute position in combination with the time-varying motion vector; and

recording the calculated time-varying absolute position of the device for subsequent outputting to an interpreter mechanism.

3. (previously presented) A method as claimed in claim 1 where the detection of the absolute position is achieved by non-contact optical means.

4. (previously presented) A method as claimed in claim 1 wherein the detection of the time-varying vector is achieved by means of a non-contact relative optical measurement.

5. (previously presented) A method as claimed in claim 1 wherein the detection of the at least one absolute position is performed by imaging a glyph bed which forms the position-

encoded portion and is applied to the surface.

6. (original) A method as claimed in claim 5 wherein the glyph bed is a machine-readable array of markings having absolute positions encoded therein.

7. (previously presented) A method as claimed in claim 5 wherein the glyph bed is invisible to the human eye or alternatively adapted to not substantially interfere with the appearance of the surface when viewed by the human eye.

8. (previously presented) A method as claimed in claim 5 wherein the glyph bed is applied using ink which is visible in the infrared part of the spectrum.

9. (previously presented) A method as claimed in claim 5 wherein the surface is overprinted with human-readable material in such a way as to obscure a portion of the glyph bed to thereby define at least part of said obscured portion of said surface.

10. (previously presented) A method as claimed in claim 1 wherein the detection of the relative position of the time-varying vector representing the movement of the device with respect to the surface is preferably measured using heterodyne or homodyne detection of non-doppler, non-speckle image signals derived from changes in the phase and/or the amplitude of reflection from an optical surface.

11. (previously presented) A method as claimed in claim 1 wherein the detection of the relative position of the time-

varying vector representing the movement of the device with respect to the surface is measured using a transducer-based arrangement.

12. (currently amended) A measurement device for determining the time-varying absolute position of the device with respect to a surface having a position-encoded portion with accessible encoded position data and an obscured portion where encoded position data is not accessible, said device including:

a first measuring device arranged to determine at least one absolute position of the device with respect to the position-encoded portion of said surface;

a second measuring device arranged to determine a time-varying vector representing the relative movement of the device with respect to the surface, wherein the first measuring device is further arranged to determine said at least one absolute position of the device at any time while said second measuring device is determining said time-varying vector;

processing means adapted to initialize the position of the vector to the at least one absolute position measurement so as to ~~output~~ produce a signal representing the absolute position of the vector and thus the time-varying absolute position of the device; and

recording means for recording the absolute position signal for subsequent outputting to an interpreter mechanism.

13. (currently amended) A measurement device for determining the absolute position of a stroke made by the measurement device with respect to a surface, said surface having embedded thereon position encoding indicia, the measurement device including:

a first measuring device arranged to detect one or more position encoding indicia and determine at least one absolute position measurement of the device;

a second measuring device arranged to measure the relative movement of the device with respect to the surface and output a time-varying motion vector representing the movement of the device with respect to the surface, wherein the first measuring device is provided for determining said at least one absolute position of the device whenever the first measuring device passes by said one or more position encoding indicia during the relative movement of the measurement device; ~~and~~

processing means adapted to calculate the absolute location of the stroke with respect to the surface on the basis of the at least one measurement of the absolute position in combination with the measurement of the time-varying motion vector; and

recording means for recording the calculated absolute position of the stroke for subsequent outputting to an interpreter mechanism.

14. (previously presented) A device as claimed in claim 12 wherein the device includes a first and second optical system, the first optical system adapted to image a glyph bed arranged to encode the absolute position onto the surface, and the second optical system adapted to determine the relative movement of the device with respect to the surface.

15. (previously presented) A device as claimed in claim 12 wherein the first and second measuring devices are incorporated into a common optical sensing device.

16. (previously presented) A device as claimed in claim 12

wherein the device has a pen form-factor or alternatively, a mouse form-factor.

17. (previously presented) A device as claimed in claim 12 wherein the device includes additional support circuitry adapted to store stroke data.

18. (previously presented) A device as claimed in claim 12 wherein the device includes communications circuitry adapted to transmit stroke data to a control means such as a computer.

19. (previously presented) A device as claimed in claim 12 wherein the device operates by buffering the stroke data for user-activated upload, or communicating the stroke data in real-time, or being responsive to a user's command to upload stroke data to a control means.

20. (previously presented) A method as claimed in claim ~~1~~ 2 further including where the detection of absolute stroke position is interrupted, attempting to interpolate across the interrupted area.

21. (previously presented) A method as claimed in claim ~~1~~ 2 further including sanity checking interpolation and stroke reconstruction based on the statistically possible locations of strokes applied to the surface.

22. (previously presented) A method as claimed in claim ~~1~~ 2 further including sanity checking absolute position measurements with respect to ~~the~~ a sequence of stroke detection events of a surface by reference to user ergonomics, physical size of the

surface, type of stroke applied or the speed of application of the stroke.

23. (previously presented) A method as claimed in claim ~~1~~ 2 further including providing feedback to a user as to whether the stroke detection is successful or not, preferably in real time.

24. (previously presented) A method as claimed in claim ~~1~~ 2, the method adapted to detect the absolute position of a plurality of strokes, said strokes constituting writing, wherein sanity checking of the absolute position detection is performed based on a forward looking probabilistic algorithm responsive to the physical writing environment and process.